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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/939,657	08/28/2001	Yuji Takahashi	R2184.0119/P119	4486

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EXAMINER
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THOMPSON, JAMES A

ART UNIT	PAPER NUMBER
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2625

DATE MAILED: 09/27/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/939,657

Applicant(s)

TAKAHASHI ET AL.

Examiner

James A. Thompson

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 July 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☐ Claim(s) \_\_\_\_\_ is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 August 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Response to Arguments*

1. Applicant's arguments filed 12 July 2006 have been fully considered but they are not persuasive.

Firstly, while the present amendments to the claims do overcome the prior art rejections set forth in the previous office action, mailed 18 April 2006, additional prior art has been discovered which renders the present claims obvious to one of ordinary skill in the art at the time of the invention.

Secondly, claim 1 recites, *inter alia*, "determining means for determining whether the first image data corresponds to a halftone image". There is nothing recited in the claims that limits, either explicitly or inherently, the determining means such that said determining means retains the first image data without change when the first image data corresponds to the halftone image, as argued on page 8, lines 3-5 and elsewhere in Applicant's present arguments. Applicant is respectfully reminded that, although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

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having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-2 and 4-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee (US Patent 6,160,913) in view of Gold (US Patent 3,584,143).

Regarding claim 1: Lee discloses an image data correcting device (figure 1 and column 3, lines 65-67 of Lee) comprising:

- detecting means for detecting an intensity difference between first image data corresponding to a part of a predetermined small area (figure 3a and column 5, lines 10-14 of Lee) and second image data corresponding to the remaining parts of the predetermined small area (column 5, lines 9-10, lines 14-19, and equations (1)-(3) of Lee). The calculation of a gradient in a window (column 5, lines 9-19 and equations (1)-(3) of Lee) is a determination of an intensity difference at the pixel of interest (i,j) of said pixel of interest and the immediately surrounding pixels of a window, said window being the small area.
- determining means for determining whether the first image data corresponds to a halftone image (column 5, line 65 to column 6, line 3 of Lee).
- intensity changing means for changing an intensity of the first image data to a predetermined low intensity (BLACK) (column 6, lines 14-21 of Lee), when the intensity difference is equal to or smaller than a first predetermined value (GT) and the first image data does not correspond to the halftone image (figure 2A(208,211) and column 5, line 66 to column 6, line 4) and the intensity of the first image data is equal to or smaller than a second predetermined value (IT) (figure 2A(215,217) and column 6, lines 11-17 of Lee).

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- the determining means retains the first image data without change when the first image data corresponds to the halftone image (column 6, lines 1-9 of Lee). If the image data pixel is a grayscale image pixel, then edge-based adaptive processing is not performed on the pixel (column 6, line 1-9 of Lee). Therefore, the first image data is retained without change when the first image data corresponds to the halftone image.

→ The method taught by Lee is embodied in an apparatus (column 3, lines 65-67 of Lee) and operates upon digital data (column 4, lines 4-9 of Lee). Therefore, either digital hardware or embodied software of said apparatus provides each of the means of the apparatus.

- said predetermined low intensity corresponds to a black level (column 6, lines 9-12 of Lee).

Lee does not disclose expressly that said black level is a background level, rather than a white level for a background level.

Gold discloses using a black level for a background rather than a white level for a background (column 12, lines 69-72 of Gold).

Lee is analogous art since both Lee and the present application are in the same field of endeavor, namely discriminating halftone image regions from other regions in digital image data. Lee and Gold are combinable because they are from the same field of endeavor, namely digital image data and document processing and halftoning. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to duplicate a negative type document, rather than a document with black text on white paper. The suggestion for doing so would have

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been that some documents are simply in the negative format, and thus require processing based on a black background with white text and lines. Therefore, it would have been obvious to combine Gold with Lee to obtain the invention as specified in claim 1.

**Regarding claim 2:** Lee discloses that the second predetermined value is determined so that an intensity of at least a part of an image other than the halftone image (column 6, lines 5-12 of Lee) is equal to or greater than the second predetermined value (figure 2A(215,218,237) and column 6, lines 16-21 of Lee) and an intensity of the halftone image is smaller than the second predetermined value (column 6, lines 11-17 of Lee). The background pixels are a part of the image other than the halftone image. The background pixels have an intensity greater than or equal to the second predetermined value (column 6, lines 5-12 of Lee).

**Regarding claim 4:** Lee discloses that the predetermined small area is defined by a pixel matrix (figure 3A of Lee), and the first image data corresponds to one of pixels located in the center of the pixel matrix (column 5, lines 7-12 of Lee).

**Regarding claim 5:** Lee discloses that the pixel matrix is a 3x3 matrix (figure 3A and column 5, lines 11-15 of Lee).

**Regarding claim 6:** Lee discloses that the predetermined low intensity is equal to or smaller than an intensity of a background of an image from which the predetermined small area is extracted (column 6, lines 11-21 of Lee). The predetermined low intensity (BLACK) is clearly smaller than an intensity of a background (WHITE) of an image from which the predetermined small area is extracted. By combination with Gold, the background would be black and the predetermined low intensity would be white, since the negative of the pixel values would be used.

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However, correspondingly, white would be considered to be of a lower intensity than black, and thus the same relationship between the predetermined low intensity and the background still holds.

4. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lee (US Patent 6,160,913) in view of Gold (US Patent 3,584,143) and Stoffel (US Patent 4,194,221).

Regarding claim 3: Lee discloses that the first predetermined value is determined so that a first intensity difference of the first image data is equal to or greater than the first predetermined value when the first image data corresponds to the halftone image (column 6, lines 24-26 and lines 29-33 of Lee), wherein the first intensity difference is based on a Sobel gradient operator in the 3x3 window (column 5, lines 10-17 of Lee).

Lee in view of Gold does not disclose expressly that the first intensity difference is a difference between the intensity of the first image data and an average in intensities of the first image data and the second image data.

Stoffel discloses calculating a difference between the intensity of the first image data (center pixel) and an average in intensities of the first image data and the second image data (neighboring pixels) (column 4, lines 50-56 and column 5, lines 9-12 of Stoffel).

Lee is analogous art since both Lee and the present application are in the same field of endeavor, namely discriminating halftone image regions from other regions in digital image data. Lee in view of Gold is combinable with Stoffel because they are from similar problem solving areas, namely the discrimination of image regions in halftone image data. At the time of the inven-

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tion, it would have been obvious to a person of ordinary skill in the art to calculate the difference between the pixel being examined and the average of the pixels in the window, including said pixel being examined, as taught by Stoffel. In the apparatus of Lee, this would correspond to calculating the difference between the center pixel of the small area window and the average over all the pixels in said small area window. The suggestion for doing so would have been that the differencing and averaging operations taught by Stoffel can be used to discriminate between different types of image data (column 4, lines 50-53 of Stoffel), which is what the apparatus taught by Lee attempts to perform. Therefore, it would have been obvious to combine Stoffel with Lee in view of Gold to obtain the invention as specified in claim 3.

5. Claims 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee (US Patent 6,160,913) in view of Gold (US Patent 3,584,143) Sakamoto (US Patent 5,235,436).

Regarding claim 7: Lee in view of Gold does not disclose expressly smoothing means for smoothing the first image data after the intensity of the first image data is changed.

Sakamoto discloses smoothing means (figure 13(32) of Sakamoto) for smoothing image data after initial processing (column 9, line 68 to column 10, line 3 of Sakamoto).

Lee is analogous art since both Lee and the present application are in the same field of endeavor, namely discriminating halftone image regions from other regions in digital image data. Lee in view of Gold is combinable with Sakamoto because they are from similar problem solving areas, namely the discrimination of image regions in halftone image data. At the time of the inven-



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tion, it would have been obvious to a person of ordinary skill in the art to use the smoothing means to smooth the image data after some initial processing, as taught by Sakamoto, wherein said initial processing is the first image data changing taught by Lee. The motivation for doing so would have been to prevent degradation in the resulting image by processing the image data based on the local image data properties (column 1, line 65 to column 2, line 3 of Sakamoto). Therefore, it would have been obvious to combine Sakamoto with Lee in view of Gold to obtain the invention as specified in claim 7.

**Regarding claim 8:** Lee in view of Gold does not disclose expressly selecting means for selecting whether to output the first image data before smoothing or after smoothing.

Sakamoto discloses selecting means (figure 13(35) of Sakamoto) for selecting whether to output image data before smoothing or after smoothing (column 9, line 65 to column 10, line 3 of Sakamoto).

Lee is analogous art since both Lee and the present application are in the same field of endeavor, namely discriminating halftone image regions from other regions in digital image data. Lee in view of Gold is combinable with Sakamoto because they are from similar problem solving areas, namely the discrimination of image regions in halftone image data. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the selection means to select whether to output the image data before or after smoothing, as taught by Sakamoto, wherein said image data is the first image data taught by Lee. The motivation for doing so would have been prevent degradation in the resulting image by processing the image data based on the local image data properties (column 1, line 65 to

column 2, line 3 of Sakamoto). Therefore, it would have been obvious to combine Sakamoto with Lee in view of Gold to obtain the invention as specified in claim 8.

**Further regarding claim 9:** Sakamoto discloses that the selecting means selects the first image data after smoothing when the first image data corresponds to an image other than the halftone image (column 9, line 69 to column 10, line 3 of Sakamoto), and selects the first image data before smoothing when the first image data corresponds to the halftone image (column 9, lines 65-68 of Sakamoto).

6. Claims 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee (US Patent 6,160,913) in view of Gold (US Patent 3,584,143) Hanyu (US Patent 5,995,658).

**Regarding claim 10:** Lee in view of Gold discloses the image data correcting device, which is the image data correcting device discussed in the arguments regarding claim 1, which are incorporated herein.

Since the apparatus of Lee inputs gray scale image data (figure 1(12) of Lee), it is reasonable to assume that the apparatus of Lee comprises scanning means for scanning an original document to obtain image data and converting the image data into digital form. However, this is not specifically recited in Lee, nor is it recited in Gold.

Hanyu discloses scanning means (figure 1(600) of Hanyu) for scanning an original document to obtain image data and converting the image data into digital form (column 4, lines 29-33 of Hanyu).

Lee is analogous art since both Lee and the present application are in the same field of endeavor, namely discriminating

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halftone image regions from other regions in digital image data. Lee in view of Gold is combinable with Hanyu because they are from similar problem solving areas, namely the discrimination of image regions in halftone image data. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the scanning means disclosed by Hanyu to obtain the image data in digital form, which is then corrected by the image correcting device taught by Lee. The suggestion for doing so would have been that a scanner can obtain the digital image data (column 4, lines 29-33 of Hanyu) that is used by the apparatus taught by Lee (figure 1(12) of Lee). Therefore, it would have been obvious to combine Hanyu with Lee in view of Gold to obtain the invention as specified in claim 10.

**Regarding claim 11:** Lee in view of Gold discloses the image data correcting device, which is the image data correcting device discussed in the arguments regarding claim 1, which are incorporated herein.

Since the apparatus of Lee inputs gray scale image data (figure 1(12) of Lee) and outputs binary image data (figure 1 ("Binary Image with Halftone Dots Removed & Objects Smoothed") of Lee), it is reasonable to assume that the apparatus of Lee comprises an image reading device generating image data by scanning an original document; and an image forming device forming a visible image based on the corrected image data supplied by said image correcting device. However, this is not specifically recited in Lee, nor is it recited in Gold.

Hanyu discloses an image reading device (figure 1(600) of Hanyu) generating image data by scanning an original document (column 4, lines 29-33 of Hanyu); and an image forming device

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(figure 1(100) of Hanyu) forming a visible image (column 4, lines 59-65 of Hanyu).

Lee is analogous art since both Lee and the present application are in the same field of endeavor, namely discriminating halftone image regions from other regions in digital image data. Lee in view of Gold is combinable with Hanyu because they are from similar problem solving areas, namely the discrimination of image regions in halftone image data. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the image reading device disclosed by Hanyu to obtain the image data in digital form, which is then corrected by the image correcting device taught by Lee. The image correcting device taught by Lee then supplies the image data to the image forming device taught by Hanyu and said image forming device then outputs the image. The suggestion for doing so would have been that the apparatus taught by Lee must be able to obtain gray scale image data (figure 1(12) of Lee), which can be obtained by an image reading device (column 4, lines 29-33 of Hanyu). Further, the apparatus of Lee outputs binary data (figure 1("Binary Image with Halftone Dots Removed & Objects Smoothed") of Lee), so it would be obvious to one of ordinary skill in the art at the time of the invention to output said binary data using an image forming device, such as the one taught by Hanyu (column 4, lines 59-65 of Hanyu). Therefore, it would have been obvious to combine Hanyu with Lee in view of Gold to obtain the invention as specified in claim 11.

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**Conclusion**

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

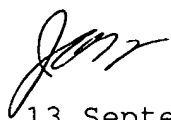
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James A. Thompson whose telephone number is 571-272-7441. The examiner can normally be reached on 8:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David K. Moore can be reached on 571-272-7437. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

James A. Thompson  
Examiner  
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13 September 2006



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